

WHAT IS CLAIMED IS:

1. Spherical tetragonal barium titanate particles with a perovskite crystal structure, having an average particle diameter of 0.05 to 0.5 μm , a particle size distribution σ_g of not less than 0.70, and a ratio of Ba to Ti of 0.99:1 to 1.01:1.

2. Spherical tetragonal barium titanate particles according to claim 1, which have a sphericity (maximum diameter/minimum diameter) of from 1.0 to less than 2.0 and a BET specific surface area value of 2 to 20 m^2/g .

3. Spherical tetragonal barium titanate particles according to claim 1, which are coated with an oxide of at least one element selected from the group consisting of Si, Y and Nd, in an amount of 0.01 to 3.0% by weight based on the weight of the spherical tetragonal barium titanate particles.

4. Spherical tetragonal barium titanate particles according to claim 3, which have a BET specific surface area value of 2 to 20 m^2/g .

5. A process for producing the spherical tetragonal barium titanate particles as defined in claim 1, which process comprises:

adding an aqueous barium salt solution to a titanium hydroxide colloid in the presence of a carboxylic acid in an amount of 1 to 60 mol% based on barium contained in the aqueous barium salt solution, thereby producing barium titanate starting particles;

hydrothermally treating a resultant reaction solution containing the barium titanate starting particles at a temperature of 100 to 350°C, thereby obtaining spherical cubic barium titanate particles; and

calcining the spherical barium titanate particles at a temperature of 500 to 1,200°C to transform the spherical cubic barium titanate particles into the spherical tetragonal barium titanate particles.

6. A process according to claim 5, wherein the surface of the spherical cubic barium titanate particles is coated with an anti-sintering agent composed of a compound of at least one element selected from the group consisting of Si, Y and Nd; and

the coated spherical cubic barium titanate particles are calcined at a temperature of 800 to 1,200°C to transform the spherical cubic barium titanate particles into the spherical tetragonal barium titanate particles.

7. A dielectric material comprising the spherical tetragonal barium titanate particles as defined in claim 1 or 3.

8. A multi-layered ceramic capacitor having the dielectric material as defined in claim 7.

9. Spherical tetragonal barium titanate particles with a perovskite crystal structure, having an average particle diameter of 0.05 to 0.5 μm , a particle size distribution σ_g of not less than 0.70, a ratio of Ba to Ti of 0.99:1 to 1.01:1, a sphericity (maximum diameter/minimum diameter) of from 1.0 to less than 2.0 and a BET specific surface area value of 2 to 20 m^2/g .

10. Spherical tetragonal barium titanate particles with a perovskite crystal structure, having an average particle diameter of 0.05 to 0.5 μm , a particle size distribution σ_g of not less than 0.70, a ratio of Ba to Ti of 0.99:1 to 1.01:1, a sphericity (maximum diameter/minimum diameter) of from 1.0 to less than 2.0 and a BET specific surface area value of 2 to 15 m^2/g , which are coated with an oxide of at least one element selected from the group consisting of Si, Y and Nd, in an amount of 0.01 to 3.0% by weight based on the weight of the spherical tetragonal barium titanate particles.

11. Spherical tetragonal barium titanate particles with a perovskite crystal structure, having an average

particle diameter of 0.05 to 0.4 μm , a particle size distribution σ_g of 0.75 to 0.9, a ratio of Ba to Ti of 0.99:1 to 1.01:1, a sphericity (maximum diameter/minimum diameter) of 1.0 to 1.4 and a BET specific surface area value of 2 to 15 m^2/g .

12. Spherical tetragonal barium titanate particles with a perovskite crystal structure, having an average particle diameter of 0.05 to 0.4 μm , a particle size distribution σ_g of 0.75 to 0.9, a ratio of Ba to Ti of 0.99:1 to 1.01:1, a sphericity (maximum diameter/minimum diameter) of 1.0 to 1.4 and a BET specific surface area value of 2 to 15 m^2/g , which are coated with an oxide of at least one element selected from the group consisting of Si, Y and Nd, in an amount of 0.01 to 1.5% by weight based on the weight of the spherical tetragonal barium titanate particles.

202507140934